REMARKS

The application has been reviewed in light of the final Office Action dated May 25, 2004. Claims 1-16 are pending. The Office Action states that claims 6-11 are allowed. By this Amendment, Applicants have canceled claim 14, and amended independent claims 1 and 12, to clarify the claimed invention. Accordingly, claims 1-5 and 12-16 are presented for reconsideration, with claims 1 and 12 being in independent form.

Claims 12, 15 and 16 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 5,484,686 to Maeda et al, in view of European Patent Application No. EP 1 058 249 of Yamada et al. Claims 12-16 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over European Patent Application No. EP 0 475 452 of Yamashita et al. Claims 1-3, 5 and 12-16 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yamashita, further in view of Japanese Patent Application No. JP 01-258222 (Shinsuke), Japanese Patent Application No. JP 61-180945 (Masatoshi) or Japanese Patent Application No. JP 04-032043 (Eri). Claims 1-5 and 12-16 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yamashita, further in view of either of Shinsuke, Masatoshi or Eri, combined with either Yamada or European Patent Application No. EP 0 867 868 of Ohno et al.

Applicants have carefully considered the Examiner's comments and the cited art, and respectfully submit that independent claims 1 and 12, as amended, are patentable over the cited art, for at least the following reasons.

This application relates to phase-change recording media. Phase-change recording media are capable of implementing repeated record/readout operations by means of laser beam irradiation utilizing phase transition between amorphous and crystalline states. There is generally a demand for improved recording

velocity, density and capacity in recording media. In implementing high recording speed while still retaining high density recording, phase-change recording media need the capability of achieving repetitive heating, quenching and annealing operations. However, conventional phase-change recording media experience difficulties obtaining high repeatability in overwrite cycles.

Applicants found through extensive research and experimentation, as discussed in this application, appropriate recording materials and materials for dielectric protective layers formed contiguously to a recording layer for a phase-change recording medium, for achieving satisfactory recording media capabilities such as recording at high linear velocities, improved recording operation cycles, storage durability and overall reliability.

For example, independent claim 1 is directed to a phase-change optical recording medium comprising a transparent substrate, a lower dielectric protective layer, a recording layer, an upper dielectric protective layer and a reflective/heat dissipating layer. The upper dielectric protective layer essentially consists of a mixture of ZrO_2 and SiO_2, having a composition of $(ZnS)_x (ZrO_2)_y (SiO_2)_{100-x-y}$, where $30 < x < 70$ and $30 < y < 70$ (mole %). Applicants do not find teaching or suggestion of a phase-change optical recording medium having such a dielectric protective layer.

Independent claim 12 is directed to a phase-change optical recording medium which comprises a reflective/heat dissipating layer provided contiguously to at least one surface of a recording layer, having a dielectric protective layer interposed between the reflective/heat dissipating layer and the recording layer.

The dielectric protective layer essentially consists of a dielectric material containing ZrO_2 as a major ingredient and has a composition of $(ZrO_2)_{100-x}$ $(CrO_2)_x$, where $0 \leq x \leq 50$ (mole %). Applicants find no teaching or suggestion in the cited art of a phase-change optical recording medium having such a dielectric protective layer.

Maeda, as understood by Applicants, is directed to incompletely erased signals on a phase-change optical recording medium. The Office Action cites Figures 73(a) and 74(a) and column 19, lines 15-48 of Maeda as disclosing use of a gold reflective layer and use of zirconia as a dielectric material.

The Office Action cites Yamada as purportedly disclosing dielectric layers and reflective layers of various constitutions.

Yamashita, as understood by Applicants, is directed to use of a quasi-amorphous zirconia dielectric layer for optical or magneto-optical data storage media. According to the Office Action, Yamada discloses use of assorted phase change materials in the recording layer and assorted metals in the reflective layer.

Shinsuke, as understood by Applicants, is directed to the problem of wear and flaw of a magnetic recording medium layer. According to the Office Action, Shinsuke teaches the addition of various oxides to zirconia in amounts of a few mole %.

Masatoshi, as understood by Applicants, is directed to use of a complex oxide in a protective layer provided on both sides of a recording layer. Masatoshi is cited in the Office Action as purportedly teaching optical recording media with silica, zirconia and niobium oxide protective layers.

Eri, as understood by Applicants, is directed to moisture proofing an optical information

recording medium by laminating a protective film (of a specific composition) on the specular surface side of a resin substrate and laminating a recording layer on the other surface. According to the Office Action, Eri teaches use of mixed zirconia, silica dioxide protective layers in magneto-optical recording media.

Ohno is cited in the Office Action as purportedly disclosing use of recording layers having a specified formula (as shown in Ohno at page 5, lines 3-54), including additives which purportedly have the benefits of stabilization and high speed crystallization.

Applicants do not find disclosure or suggestion by the cited art, however, of a phase-change optical recording medium wherein (i) he upper dielectric protective layer essentially consists of a mixture of ZrO_2 and SiO_2, having a composition of $(ZnS)_x$ $(ZrO_2)_y$ $(SiO_2)_{100-x-y}$, where $30 < x < 70$ and $30 < y < 70$ (mole %) [claim 1], or (ii) the dielectric protective layer essentially consists of a dielectric material containing ZrO_2 as a major ingredient and has a composition of $(ZrO_2)_{100-x}$ $(CrO_2)_x$, where $0 \leq x \leq 50$ (mole %) [claim 12].

Since the cited art does not disclose or suggest each and every feature of the claimed invention, the cited art does not render the claimed invention unpatentable.

Accordingly, for at least the above-stated reasons, Applicants respectfully submit that independent claims 1 and 12, and the claims depending therefrom, are allowable.

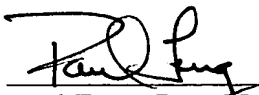
If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Office is hereby authorized to charge any fees that may be required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is

respectfully requested to call the undersigned attorney.

Allowance of this application is respectfully requested.

Respectfully submitted,



Paul Teng, Reg. No. 40,837
Attorney for Applicants
Cooper & Dunham LLP
Tel.: (212) 278-0400